

Remarks/Arguments***Claim Amendments***

Claims 10 and 16 have been amended to address minor informalities, in particular the absence of the word “and” preceding the final claim element. No new matter is added by these amendments.

Claim rejections – 35 U.S.C. § 103

The claimed invention relates to imaging a target in three dimensions.

The applicant traverses the outstanding claim rejections, and respectfully requests reconsideration of the outstanding obviousness rejection based in part upon U.S. Pat. No. 5,699,112 to Bacs (“Bacs”). Bacs discloses an image stabilizing apparatus with an aperture that moves to counteract spurious camera motion. The examiner has correctly observed that Bacs discloses more than mere image stabilization. However, a careful reading of Bacs confirms that there is no suggestion of imaging a target in three dimensions as currently claimed. To the contrary, the teachings of Bacs illustrate by way of numerous examples that Bacs did not contemplate any encoding of image disparity or other depth information that could be usefully combined with the image correlation techniques of Hsueh to obtain a three dimensional image.

In one example, Bacs describes the capture of data for stereoscopic rendering – i.e., two images from different aperture locations. See Bacs, col. 6, line 63 – col. 7, line 23. While this may be used to provide an appearance of depth in a rendered image (familiar to any user of a View-Master® stereoscopic imaging toy), it explicitly does not provide imaging of a target in three dimensions, or otherwise produce three-dimensional data relating to an imaging subject. As stated in Bacs, “The principles of the present invention may also be applied in the computer generation of images which then can be displayed in three-dimensional *illusion*.” Col. 6, lines 63-65 (emphasis added).

In another example, Bacs describes a use of parallax for range finding. See Bacs, col. 7, line 66 – col. 8, line 55. As a general proposition, range finding is inherently different from capturing an image in three dimensions. Range finding relates to the

acquisition of a distance without reference to direction, whereas capturing an image in three dimensions requires some form of encoding x, y, and z data for a subject, or data that can be transformed into x, y, and z data. The range finding system of Bacs exploits the fact that a change in position of *two different objects* relative to one another when viewed from different aperture locations can be related through straightforward triangulation to a distance of one of the objects *when the distance of the other object from the camera is known*. In order to apply this relationship, Bacs requires both a fixed camera reference position *and* a stationary reference object having a known distance from the reference position, or as stated in Bacs, “The distance between video camera 130 in its reference position and reference object 134 is known.” Bacs, col. 8, lines 35-36. From this starting point, the relative motion between a target object and a reference object can be tracked during “parallax scanning” (i.e., movement of the aperture), and used to calculate a range from the camera to the target object. This is wholly inapplicable to the presently claimed techniques for three dimensional image capture, and cannot usefully be combined with the correlation techniques of Hsueh (which generally exploit detection of the same point in two or more images) to achieve the claimed invention.

Bacs does not teach or suggest any imaging of a target in three dimensions as that term is used in the claims, and Bacs cannot, either alone or in combination with other references, render the claimed invention obvious. The applicant respectfully requests reconsideration and withdrawal of the claim rejections based on Bacs.

Conclusion

All of the claims are believed to be in condition for allowance, and a Notice of Allowance is respectfully requested for same.

Resolution of outstanding matters is earnestly solicited. If the Examiner believes a telephone conference would expedite prosecution of this application, the Examiner is urged to telephone the undersigned at (781) 453-9993.

Respectfully submitted,
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